

Supplementary information

For

Self-assembled Recyclable Hierarchical Bucky

Aerogels

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S1: Comparison of BAG 10, 20 and 50 structures:

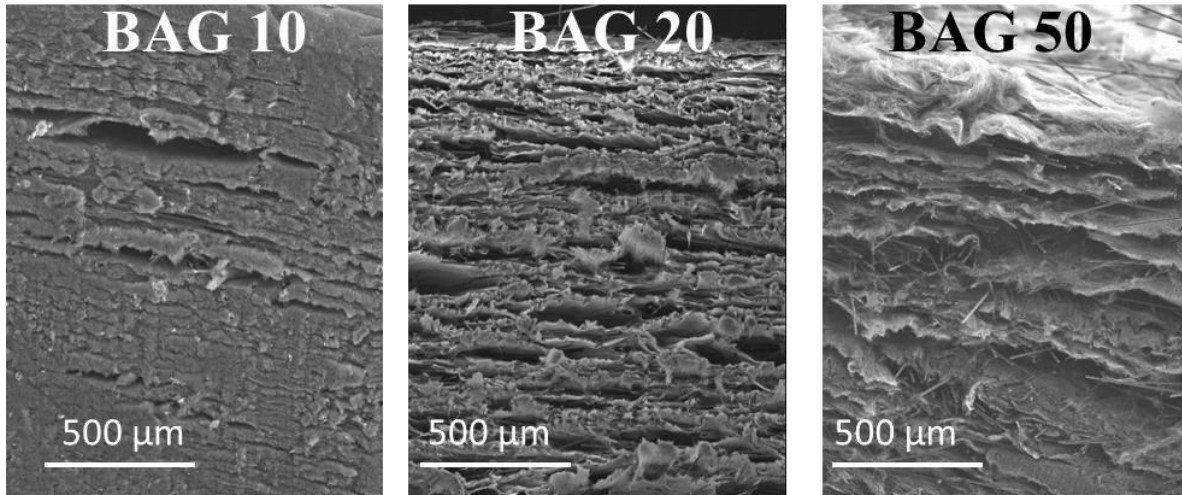


Figure S1: SEM images of crosssectional view of BAG 10, 20 and 50. Clearly, the interlayer spacing (macropores) in the BAG samples is increasing with the increase in the carbon fiber content.

S2: N₂ adsorption measurements: Nitrogen adsorption at 77 K was performed with a physisorption analyzer (Micromeritics ASAP 2010) to characterize the surface areas and pore size distributions of the CNTs. The Brunauer-Emmett-Teller (BET) equation and Barret-Joyner-Halenda (BJH) were respectively used to calculate pore size distributions and specific surface area from adsorption isotherms [R1].

Table S1: Pore size distribution for various BAG samples obtained from BET measurements.

Sample	Micropores (dia <2 nm)	Mesopores (2 nm <dia<50nm)	Macropores (dia >50 nm)	Pore volume (cm ³ /g)	BET Surface Area (m ² /g)
BAG-10	3.2%	28.8%	68%	0.072	24
BAG-20	1.6%	26.9%	71.5%	0.065	22
BAG-50	3.1%	16.9%	80%	0.060	21

[R1] Zhang, S., Shao, T., Bekaroglu, S.S.K., Karanfil, T., 2009. The impacts of aggregation and surface chemistry of CNTs on the adsorption of SOCs. Environmental Science and Technology, 43 (15), 5719-5725.

S3: Video Description

Video 1: BAG 50 absorbing vegetable oil. Once saturated, it may be squeezed or burnt to retrieve the oil without degrading its mechanical and absorptive properties.

Video 2: Unburnt BAG sample subjected to compression- No sample degradation was observed after many cyclic compressions. 7 such cycles are shown in the video.

Video 3: Burnt BAG sample subjected to compression- Burning the BAG sample to utilize the absorbed oil does not alter the physical and mechanical properties significantly. The burnt BAG sample is also highly elastic and shows no degradation under many cycles of compression. 8 compression cycles are shown in the video.